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PF040024

Listing and Amendments to the Claims

1. (currently amended) Imager sequential illumination system comprising:
 - a source emitting towards the imager a polychromatic light beam in ~~the a~~ wavelength region comprising at least three primary colors ~~colours~~,
 - a device for scrolling colored ~~coloured~~ segments comprising at least three transmissive or reflective segments, the ~~said~~ scrolling device making it possible to scroll the ~~said~~ segments over the optical path of the ~~said~~ polychromatic light beam so that they successively cut the direction of propagation of the ~~said~~ beam in the case where the segments are transmissive, or so that they successively reflect the ~~said~~ beam in the case where the segments are reflective, the ~~said~~ segments being of different colors, ~~colours~~ and each segment having a hue, a saturation, a transmissivity or a reflectivity, and a size that ~~is~~ are suitable for obtaining a colored beam exhibiting a primary color with a reference hue when it is scrolled over the optical path of the polychromatic light ~~they scroll sequentially through the said zone of transmission of the~~ beam,

wherein the colored ~~coloured~~ segments are distributed in the ~~said~~ scrolling device in an order such that the differences of energies between any two successive colored beams that follow one another perceived by the visual system of a standard observer (visual stimuli), during the intersegment transitions, when the segments scroll over the optical path of the polychromatic light ~~said~~ beam, are the least variable possible, the energies being defined as perceived by the visual system of a standard observer.

2. (currently amended) The illumination ~~illumination~~ system according to Claim 1, wherein the colored ~~coloured~~ segments are distributed in an order such that the sum of the ~~said~~ differences of energies ~~perceived by the visual system of an observer during the various transitions~~ between any two successive colored beams ~~segments~~, is minimized.

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3. (currently amended) The illumination system according to Claim 2, wherein the scrolling device comprises several segments of like color ~~colour~~ so as to reduce the mean differences of excitation energies by distributing them over several intersegment transitions.

4. (currently amended) The illumination system according to Claim 3, wherein the scrolling device comprises a different number of segments of primary or recomounded colors ~~colours~~ so as to reduce the mean differences of excitation energies by distributing them over several intersegment transitions.

5. (currently amended) The illumination system according to Claim 1, wherein the ~~said~~ device for scrolling colored ~~coloured~~ segments comprises a color ~~colour~~ wheel comprising at least three transmissive or reflective segments, the ~~said~~ wheel being mounted on means of rotation so as to scroll the ~~said~~ segments over the ~~said~~ optical path of the ~~said~~ light beam.

6. (currently amended) Method of design of a color ~~colour~~ wheel for an imager color ~~colour~~ sequential illumination system, comprising

the step of providing the ~~said~~ wheel having comprising at least three transmissive and/or reflective segments that are suitable for obtaining successive beams of different colors when the segments scroll sequentially through a zone of transmission of an illumination beam, the ~~said~~ segments being of different or identical colors, ~~colours~~ and each segment having a hue, a saturation, a transmissivity or a reflectivity, and a size that is ~~are~~ suitable for obtaining a colored beam exhibiting a reference hue when it crosses the ~~they scroll sequentially through a~~ zone of transmission of the an illumination beam, ~~wherein it comprises~~

a step of measuring the excitation energies of each colored beam induced by the various segments in the visual system of an observer, and

a step of distributing the colored ~~coloured~~ segments over the ~~said~~ color ~~colour~~ wheel in an order such that the differences of measured successive excitation energies between any two successive colored beams that follow one another ~~of the visual system of a standard~~

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~~observer (visual stimuli), during the intersegment transitions~~, when the segments scroll in the order through the ~~said~~ transmission zone, are the least variable possible.

7. (currently amended) The method ~~Method~~ according to Claim 6, wherein for a color ~~colour~~ wheel furnished with a determined number of segments each having a determined dimension and making it possible to obtain a determined global color ~~colour~~ temperature, the distributing of the segments over the ~~said~~ wheel is carried out in such a way that the sum of the ~~said~~ differences of energies between any two successive colored beams perceived by the visual system of an observer, when the segments scroll through the said transmission zone, is the lowest possible.

8. (currently amended) Device of colored ~~coloured~~ segments comprising a plurality of juxtaposed zones of different colors ~~colours~~ making it possible to provide, by illumination of the various zones, beams of different colors ~~colours~~, wherein the ~~said~~ zones of different colors ~~colours~~ are arranged in an order such that when they are successively illuminated according to the ~~said~~ order, the differences of energies between any two successive colored beams that follow one another perceived by the visual system of a standard observer (visual stimuli), during the interzone transitions, when the illumination passes from one zone to another the next zone in said order, are the least variable possible, the energies being defined as perceived by the visual system of a standard observer.

9. (currently amended) The device ~~Device~~ of colored ~~coloured~~ segments according to Claim 8, wherein the ~~said~~ zones of different colors ~~colours~~ are arranged in an order such that the sum of the ~~said~~ differences of energies between any two successive colored beams perceived by the visual system of an observer during the various transitions between successive zones, is the lowest possible.

10. (currently amended) The device ~~Device~~ of colored ~~coloured~~ segments according to Claim 8, wherein it comprises a color ~~colour~~ wheel.